THE

AMERICAN REVIEW OF TUBERCULOSIS

ABSTRACTS OF TUBERCULOSIS

VOLUME V OCTOBER, 1921 ABST. NO. 6

Abstracts of Tuberculosis *will be published at intervals as an integral part of the American Review of Tuberculosis. It will receive separate paging and may, if desired, be bound separately at the completion of the volume.*

The Abstract Editor is Dr. George Mannheimer, 41 West 51st Street, New York City. Prompt transmission to him of reprints or abstracts of papers on tuberculosis, sanatorium or board of health reports, etc., will promote their early publication in this section.

Abstracts should be sent typewritten on one side of the page only. They should be as concise and compact as the subject matter of the article warrants. They should be headed with a short title, and followed by the full title of the paper, author's name, journal, date, volume and page.

History of Tuberculosis.—References to pulmonary tuberculosis under the name of phthisis are found in the earliest medical records; and Hippocrates and Galen gave excellent clinical descriptions of advanced cases. Hippocrates defined phthisis as suppuration and ulceration of the lung; and included empyema, bronchiectasis, abscess of the lung and gangrene under the same head. Franciscus Sylvius (1614–1672) gave the main symptoms of the disease, such as wasting, cough, spitting of pus and hectic fever. He attributed the disease, in most cases, to pleurisy ending in suppuration. While Hippocrates and his successors had observed only cavities, Sylvius stated that tubercles are often seen in the lung in cases of consumption, and that these may soften and form vomicae. He thought that tubercles are enlarged lymphs nodes and that these nodes become visible when diseased. Richard Morton (1635–1696) observed that the disease is very prevalent, that it associated with lymphatic swellings elsewhere, and that tubercles are found in the lungs in all cases of consumption and often heal spontaneously. Matthew Baillie (1761–1823) observed that there are no lymph nodes in the lungs and that tubercles arise in the cellular tissue. Bayle (1774–1816) was the first to use the word miliary and tuberculous diathesis. Laennec (1781–1826) stated that all phthisis is tuberculous. Virchow (1821–1902) pointed out that not caseation, but miliary tubercle is the criterion of tuberculosis. In 1868 Villemin published his work on the experimental production of tubercle in animals. In 1882 Koch announced his discovery of the tubercle bacillus. For two thousand years the disease was regarded as incurable, until in modern times series of necropsies from general hospitals were published, when about 80 per cent of bodies were found to contain arrested tubercle, in the lungs or elsewhere. The hereditary factor had been regarded as the chief cause until modern times. The treatment had been warmth, suitable climate and blood letting. In 1840 the author's grandfather introduced the use of codliver oil. Open air methods were introduced about 1850, though Sydenham in 1670 recommended horseback riding. Brehmer started the first sanatorium in Germany in 1859.—*The History of Tuberculosis, H. E. Symes-Thompson, Practitioner, June, 1921, cvi, 426.*

Framingham Community Health and Tuberculosis Demonstration. — The Framingham Community Health and Tuberculosis Demonstration has been in active operation now for more than four years. Although the time is too short completely to evaluate the results, most of the medical work is being done through the consultation service, at the request of phys-

icians, and the results that have been obtained have been due to the coöperation of the physicians. The amount of tuberculosis discovered in the early part of the demonstration, through all channels, indicated that 1 per cent of the people had active pulmonary tuberculosis. The average number of tuberculosis cases reported to the board of health in Framingham in the decade before the demonstration started was thirteen per year. During the last four years, the average number of cases reported to the board of health has been forty-three per year. At the present time (June, 1921), the number of active tuberculous cases is considerably less than at any time since the demonstration started. In the diagnosis of tuberculous disease, in all cases that have been seen by the community demonstration examiner, the diagnostic standards covering pulmonary and nonpulmonary disease in childhood and adults, were prepared for the demonstration by a committee appointed by the president of the National Tuberculosis Association. Since the demonstration opened, there have been eighteen deaths that, after careful analysis of their histories, it would seem should have been prevented or at least postponed. This number represents 19 per cent of the total number of deaths analyzed since the demonstration opened. During the four year period, out of a group of 376 individuals, including active, arrested, early and advanced disease, 21 per cent died. Those whose deaths were classified as preventable or postponable constitute 4+ per cent. Consequently, the percentage of the total that might be considered to represent the irreducible fatality rate for such a representative group of tuberculous individuals over a period of four years would be 21 per cent minus 4 per cent, or 17 per cent. The chief factors that seem to be responsible for the late discovery of tuberculosis cases which give to the community every year advanced and dying patients that have not been known or treated for tuberculosis in the early stages of the disease are the recluse type, which seems to be the main type, never receiving any medical attention; failure of patients to seek medical advice early, or, if they do, not to give the physician sufficient time to make a diagnosis; occasional failure of physicians to detect disease early; failure of both physician and patient to use all of the services at their command for early diagnosis of tuberculous disease; lack of complete annual medical examination; and lack of annual factory and school examinations.—*Framingham Community Health and Tuberculosis Demonstration: Certain Medical Results, D. B. Armstrong and P. C. Bartlett, J. Am. M. Ass., August 20, 1921, lxxvii, 585.*

Fundamental Factors in the Control of Tuberculosis.—The campaign for the control of tuberculosis is one of education and not of quarantine. It must extend over a long period of time and on a big scale. It must take cognizance of the fact that as the disease decreases, the fight must be more carefully made, because our race becomes one of nonimmunes. It will require constantly increasing sums of money, which must be secured from the public. It can be secured only by keeping in touch with the people, to insure their coöperation. To do this the workers must not travel too far ahead of public sentiment, nor forget public ideals. No campaign can be successful unless it is a part of a general health movement, coördinated with the various bureaus of the health department, subservient to the general health movement, and coördinated, further, with all welfare agencies and the Bureau of Animal Husbandry. The educational system must include the extension department of the bureau, keeping in touch with the tuberculous population, presented to them in their own language, catering to their ideals, and to local and sectional peculiarities. The sanatorium is the fountainhead from which all this should flow and through which public sentiment for the final work may be crystallized. The sanatorium is a failure, as far as the prevention of the disease is concerned, unless it is operated as an educational institution rather than as a hospital. A place must be had where the indigent tuberculous population may be cared for during the remaining days of their lives, in order to protect an increasingly large number of the nonimmune race from the dangerous carrier.—*Fundamental Factors in the Control of Tuberculosis, with Especial Reference to the Sanatorium, H. Boswell, J. Am. M. Ass., August 13, 1921, lxxvii, 523.*

Sanatorium Care of Tuberculous Soldiers.—The authors discuss the tuberculosis problem which has arisen from the war and which the federal government is trying to solve. They report on the results of an inspection of tuberculosis sanatoria and the work being done and point out the needs of this service. One of the most serious obstacles in the operation of government sanatoria is the scarcity of physicians and nurses specially trained in tuberculosis. Theoretically, many of the government sanatoria are too large to attain the maximum of service for the individual patient. On account of the shortage in medical personnel, it has been found impossible to secure entirely satisfactory commanding officers and chiefs of medical service for all of the existing institutions. The most

serious fault in these government sanatoria, and one which will be overcome only with the greatest difficulty, if at all, is the flagrant lack of discipline to be observed in practically all of the institutions. The patients apparently fail to recognize that reasonable discipline is an essential part of the treatment of tuberculosis, and seem to regard all disciplinary efforts as an arbitrary and offensive use of authority. It was the opinion of every member of the inspecting committee that the men are being distinctly harmed by the possession of an excessive amount of money derived from federal compensation, and it was recommended that some legislative action be taken by Congress, whereby compensation funds may be turned over to the members of the soldiers' families or accumulated with interest until the soldier is discharged from the sanatorium. So long as these restive and restless patients feel that their insubordination and hurtful indiscretions are condoned, and so long as the authority of the institutional heads is overridden by powerful political influence, government sanatoria will fail to measure up to any sort of high standards and will fail to compare favorably with well conducted private institutions. If every physician and every nurse connected with the government sanatoria are required to become proficient through special training and instruction, there will ultimately be available a large group of physicians and nurses who will find ready employment and who will be exceedingly valuable in the many county and municipal sanatoria which are being established in all parts of the country.—*The Sanatorium Care of Tuberculous Soldiers by the Federal Government, G. T. Palmer and H. W. Hoagland, J. Am. M. Ass., August 13, 1921, lxxvii, 506.*

Smoking in Pulmonary Tuberculosis.—The circulatory stimulation of tobacco is decidedly advantageous to some patients. One patient stated that smoking caused his temperature to rise. Investigation verified his assertion. In habitual smokers tobacco increases pulse rate and, to a certain extent, the blood pressure. As a result of this circulatory stimulation, there occurs an increase in the movement of the blood which is shared by the pulmonary circulation. In this respect, the effect of smoking is analogous to that of exercise. It is obvious that this increased flow of blood through the lungs can only favor the access of toxins to the circulation, certainly undesirable if sufficient to cause a rise in temperature. It is also evident from the foregoing that smoking should be stopped by those patients with bloody expectoration or recurrent hemorrhages. This effect of tobacco does not occur in every individual. Some patients may smoke without ill effect; but in any case in which the question arises whether or not smoking is inadvisable, decision can be made only by observation of the effect of tobacco on that particular individual. In other words, the effect of smoking deserves investigation in every case.—*Smoking in Pulmonary Tuberculosis, E. A. Duncan, J. Am. M. Ass., August 13, 1921, lxxvii, 526.*

Tuberculosis after Industrial Accidents.—Broca recalls that there is a history of visceral or glandular tuberculosis in practically every case of tuberculous lesions in bones or joints. On the other hand, tubercle bacilli are very rarely found in the blood in the chronic tuberculous. Still another argument against the traumatic origin of bone and joint tuberculosis is his discovery that none of 500 children whom he has treated for contusions, sprains or other trauma before 1913 has developed a tuberculous process since in the region of the injury. The industrial accident which every one is so prone to hold responsible for the tuberculous lesion in reality probably merely revealed its unsuspected presence. The movement which reveals the pathological condition may not be greater or more vigorous than the ordinary movements, although claimed as trauma by the subject. Two important practical conclusions are evident from his data. One is that every accident involving a bone or joint should be radiographed immediately; this would do away with the necessity for much litigation. The other conclusion is that any history of a tuberculous bone or joint affection should exempt from military service, with its right to a pension, for any affection declared or aggravated later than sixty days after being enrolled.—*Note sur la tuberculose ostéoarticulaire des accidents du travail, A. Broca, Bull. Acad. d. Méd, May 31, 1921, lxxxv, 629.*

The Phrenic Sign in Pulmonary Tuberculosis.—Ragot has been impressed with the constancy of a very sensitive point in the supraclavicular fossa with pulmonary tuberculosis. The pain on pressure is diffuse and extends deep into the middle of the chest. The point in question is where the phrenic nerve lies on the anterior scalenus muscle, between the two heads of the sternocleidomastoid. Pain on pressure here is a very early sign of tuberculous infection of the lung, and seems to be constant with this, but is never found with

pneumonia or other nontuberculous processes.—*Le signe du phrénique dans la tuberculose pulmonaire, A. Ragot, J. d. Méd. d. Bordeaux, May 25, 1921, xcii, 272.*

Albumin in Sputum Aid in Early Diagnosis.—The qualitative and quantitative examination of the sputum for albumin is an easy and useful method of arriving at a diagnosis in the earlier stages of pulmonary tuberculosis, and might with advantage be employed not only by the specialist, but also by the busy general practitioner. The presence of albumin in the sputum is an indication of active disease of the lung tissue itself. If the bronchi alone are affected, the amount of albumin present, if any, will be negligible. If other inflammatory diseases of the lungs are excluded, all patients with 0.2 per cent or more of albumin in the sputum may be regarded as suffering from active pulmonary tuberculosis. Used in conjunction with diagnostic subcutaneous injections of a reliable tuberculin, the albumin test is a means of distinguishing between active and inactive tuberculosis. If the reaction is positive, the disease is active; if negative, the condition is latent.—*Significance of Albumin in Sputum; Application to Early Diagnosis in Pulmonary Tuberculosis, A. C. Alport, South Afr. Med. Rec., April 9, 1921, xix, 127.*

Stability Reaction of Blood in Tuberculosis.—If blood is prevented from coagulating (for instance, with oxalate or citrate), the red blood corpuscles during gravidity and in most pathological states sedimentate faster than in normal conditions. Westergren has investigated the suspension stability as it occurs in pulmonary tuberculosis. Altogether about 4,000 tests have been made. It is obvious that a reaction of the organism caused by the pathological process (proceeding or just passed off) is reflected in the suspension stability of the blood. And, furthermore, the degree to which the stability is reduced corresponds surprisingly well to the extent of activity which the process, clinically interpreted, may be presumed to possess. On the whole, the figures are increased with increase of lesions of the lung tissue, but acute cases show the strongest reactions, and chronic cases relatively lower figures, which are generally correlative to the activity of the process. No single test of an active, or probably active, case has given a normal value, and no case which must be considered quite benign and certainly shows no signs of activity, has given a high, even a middle-high figure. The stability frequently is reduced, even to a very high degree, though for a long time quite a normal temperature has been observed, and the stability reaction seems considerably more than the temperature to be a reliable measure of the activity of the process. When a series of probatory injections of tuberculin was made, and the patients were followed up with stability reaction tests every day or every second day, without exception a typical influence by the tuberculin on the stability has been discovered; in the first place, an obviously increased sedimentation appears, which may be noted earlier and always lasts for a longer time than the reaction of the organism which is manifested in the general state and by careful measurements of the temperature. Though reduction of the suspension stability is in no way a specific reaction, the stability reaction very likely can have a diagnostic value for tuberculosis. With normal stability, an active phthisis is most probably to be excluded.—*Stability Reaction of Blood in Pulmonary Tuberculosis, A. Westergren, Brit. J. Tuberc., April, 1921, xv, 72.*

Complement Fixation in Surgical Tuberculosis.—Contrary to the usual opinion that humoral antibodies are found only in visceral tuberculosis, the authors find a large percentage of cases of tuberculosis of the bones reacting positively with Besredka's antigen. Eight hundred and sixty-nine cases of bone, joint and lymph node disease, including 713 cases of tuberculosis of vertebrae, hip, knee, etc., were examined. Ages varied from two to fourteen years. In general, positive reaction was indicative of activity of the lesion. Where the process was beginning to be limited by fibrosis, the reaction was usually negative. Of 100 cases of rickets examined, 10 gave positive complement fixation tests with the Besredka antigen. Six per cent of 56 other cases of nontuberculous bone disease reacted positively.—*Réaction de fixation a l'antigéne de Besredka dans la tuberculose externe, B. Fried and M. Moser, Ann. de l'Inst. Pasteur, June, 1921, xxxv, 388.*

Complement Fixation Reaction in Tuberculosis.—Seventy-seven out of 78 cases of manifest pulmonary tuberculosis gave positive complement fixation tests with Besredka antigen. The single negative result occurred in a patient dying with tuberculous pneumonia, who had syphilis at the same time. Four out of 6 cases of tuberculous peritonitis reacted positively. Of the 2 negatives one died of tuberculous meningitis, and the other was in a state of profound cachexia. Sixteen out of 28 cases of serofibrinous pleurisy, presumably

tuberculous, reacted positively, as did 20 out of 44 cases of tracheobronchial adenopathy. The reaction was positive in 51 out of 80 cases of clinically latent tuberculosis. Of 148 cases where tuberculosis was not believed to be present 17 reacted. The 131 negative ones included a number of nontuberculous respiratory diseases. Positive results were secured in some cases with the blood of syphilis and malaria patients. Except in the presence of these diseases the authors consider the reaction highly specific.—*Réaction de fixation (antigène de Besredka) et tuberculose, J. Rieux et Mlle. Bass, Ann. de l'Inst. Pasteur, June, 1921, xxxv, 378.*

Disinfection of Tuberculous Sputum.—In order to be of general use a tuberculous sputum disinfectant should be cheap, nonpoisonous and odorless, and disinfection should be simply and rapidly performed. On account of the difficulty of penetration of sputum masses a homogenizing agent like antiformin seems essential. The latter is, however, too expensive. Tests with sodium and potassium hydroxide in various concentrations proved unserviceable since they require shaking or agitation. Their caustic action also excluded them. A double volume of milk of lime (20 per cent), shaken before use, proved a good homogenizing agent, homogenizing even large lumps of sputum within one hour. After standing for some time the majority of the tubercle bacilli in the sputum were found in the upper layers of fluid. To the homogenized sputum was then added enough unslaked lime in small lumps (walnut size) until they could be seen at the fluid level. A violent reaction occurs sufficient to occasion a temperature of 100–102°C. which then gradually drops, but remains over 95° for five minutes, that is, sufficiently long to kill tubercle bacilli. The best proportion of unslaked lime to milk of lime was found to be 2:1. Pulverized unslaked lime was not as serviceable as the lumps of walnut size since the reaction became too violent. Mixtures of lime with sand or magnesium salts were not as serviceable. The unslaked lime must be kept in closed vessels and tested before use with water, using 200 grams of unslaked lime to 100 cc. of water. A temperature of 100°C. must be reached within the first twelve minutes. *Instructions*: Water is put in the sputum cup and an equal volume of sputum is deposited. For disinfection the cup is placed on news or blotting paper, and unslaked lime is added until about as much is visible above the fluid as is contained below it. At the end of disinfection, which is accompanied by the evolution of heat and steam, the entire mass is allowed to cool and is poured (now being harmless) upon a sheet of paper which can be thrown upon the waste pile. The cup can be further rinsed with warm water. With tenacious sputum it is advisable first to use an equal volume of milk of lime (100 volumes of unslaked lime mixed with 60 parts of water; of the resultant powder 1 litre mixed with 4 liters of water).—*Über die Desinfektion des Tuberkulösen Auswurfs, Schuster, Ztschr. f. Hyg., July 6, 1921, xcii, 510.*

Antigenic Property of Low Virulent Tubercle Bacilli, Turtle and Other Acid fast Bacilli.—Reasoning that the allergic reaction is the first and foremost earmark of an immunity in tuberculosis, the antigenic (sensitizing) properties of four different strains (Valleé's low virulent tubercle bacillus, an avian tubercle bacillus, a grass bacillus and Friedmann's turtle bacillus), of living bacilli in doses of 1 to 100 mgm., were tested by injection intraperitoneally in guinea pigs. After an incubation period of twenty-three to thirty-two days an exciting intravenous injection of 50 mgm. of heat-killed human tubercle bacilli was given to the majority of the 29 pigs tested. Of the turtle and grass bacillus prepared pigs one was tested with old tuberculin (0.5 cc. intraperitoneally) and 3 with 50 mgm. of bacilli of the homologous strain intravenously, to determine whether sensitization to the same strain was more successful than to the human bacilli. The grass and turtle bacilli proved only slightly if at all antigenic (sensitizing), while the Valleé and avian strain fairly consistently proved antigenic; both of the latter regularly producing tuberculous changes in the organs in doses of 1 and 10 mgm. The conclusions reached are that the Valleé and avian bacilli in large disease-producing doses fairly regularly act as antigens, while the grass and turtle bacilli even in very large doses are practically without antigenic properties, thus resembling dead bacilli. They lack the power to produce disease upon which the sensitizing and immunizing action of living bacilli depends.—*Beitrag zur antigenen Wirkung von schwachvirulenten Tuberkelbazillen, Schildkröten- und anderen säurefesten Bazillen, Fürth, Zschr. f. Hyg., December 13, 1920, xci, 197.*

The New Concentration Methods for Examination for Tubercle Bacilli in the Sputum.—The author reviews the recent reports from laboratories doing large numbers of microscopic examinations for tubercle bacilli in the sputum and his own

personal experience with the following methods: the simple antiformin (one part of sputum and two parts of 50 per cent antiformin); the Schulte procedure (the former mixed with one part of alcohol); the iron chloride precipitation of Ditthorn-Schultz (six parts of the second mixture with 0.3 part 20 per cent ferric chloride solution); and the aluminum sulphate method of Schmitz-Brauer (six parts of sputum with 0.3 part of 10 per cent aluminum sulphate solution and a few drops of equal parts of absolute alcohol and chloroform). Since approximately only 20 per cent of sputums sent to laboratories are found positive by the ordinary direct staining method, to examine all of the remaining 80 per cent of negative sputums by the special methods entails too much work. It is therefore recommended that sputums, as sent in for examination, be studied in the original smear. If this is negative, it is so reported and a request for a second sample is submitted with the report. The second specimen, if negative in the original smear, is then submitted to the antiformin test (Uhlenhuth), preferably the simple procedure. Sputums which yield only small amounts of sediment by this method are subjected to procedures which precipitate the proteins present. In this way time is saved which may be well spent in the examination of sputums demanding special attention.—*Die neueren Anreicherungsverfahren für den Tuberkelbazillen—Nachweis im Sputum und ihre Anwendung bei den Untersuchungsämtern, F. Friedland, Ztschr. f. Hyg., January 29, 1921, xci, 440.*

Pseudotuberculosis Due to Disease of the Upper Air Passages.—During the late war the French physicians had considerable to say of a false tuberculosis encountered in recruits, which very closely simulated the genuine condition but was found to improve on the correction of intranasal deformities, sinus disease, and other anomalies of the upper air and food passages. In the *Journal de médecine et de chirurgie pratiques* for March 25, 1921, cviii, 6, Festal gives an elaborate account of the syndrome in question. The author states that it was well enough known before the war, but that the latter focused the eyes of the profession on it. Sergent found that many subjects rejected as tuberculous or suspects were of this type, which was moreover very common. The resemblance to the early stage of tuberculosis of the lungs was often startling—slight temperature rise, emaciation, lassitude, spasmodic cough with profuse expectoration in the morning on waking, and even physical signs suggesting apical lesions. Of the two resources which might be expected to diagnosticate or exclude tuberculosis even the X-ray seemed noncommittal; only the bacteriological examination was frankly negative. The X-ray plate showed at times the absence of normal transparency of the apex with or without a suspicious hilum shadow. Auscultation and percussion gave the signs commonly encountered in early apical tuberculosis, such as lessened breathing, prolonged expiration, and slight dulness. The research for Koch's bacillus continued to be absolutely negative in the face of all subtleties of resource for bringing out the latter. In the course of a systematic examination the patients were found to present nasal obstruction, hypersecretion from the nasal passages which was at times purulent, empyema of some one or more of the sinuses, adenoid hypertrophy, and in some cases atrophic rhinitis. The patients attributed these troubles to tobacco and so were not especially concerned about them. Indeed, they seem to have given them very little inconvenience. The rhinologist in examining these cases learned to look into the nasopharynx at the outset and the peculiar conditions encountered there sufficed to exclude for the time the suspicion of tuberculosis. There was, however, always the possibility of supervention of the latter. Lemoine and Sieur once placed on record the physical signs encountered in the lungs of mouth-breathers irrespective of the causation. These sufficiently resemble those of beginning tuberculosis, and the author frankly admits that he does not attempt to differentiate by physical signs alone. One should proceed at once to the bacteriological diagnosis, but should this prove negative one cannot always straightway exclude tubercle. Difficulty of radiological differentiation has already been mentioned, and the reliance on the effects of treatment of the nose and nasopharynx. But while in one patient the change for the better is at once apparent, in another two or three months may elapse before the benefit is realized. There is a third type in which, after a clearing up of the upper passages, the patient's chest shows no improvement at all, and here we have to regard him, for the time being, as actually tuberculous or perhaps as having recovered from tuberculous lesions with residual sclerosis, etc., until time comes to our aid.—*Editorial, Med. Rec., August 27, 1921, c, 372.*

Laryngeal Tuberculosis.—Careful investigators differ widely as to the number of tuberculous patients who develop a laryngeal complication. Its occurrence, how-

ever, is much more common than is ordinarily supposed. Baldwin of Saranac Lake reports an involvement of the larynx in from 16 to 40 per cent of his cases. Von Ruck gives 58 per cent. Lockard from a collection of 14 reports gathered from different parts of the world estimates the average as 34.5 per cent. Mullen says the percentage varies from 5 to 85 per cent, but thinks the latter figure to be more nearly correct. The author believes 40 to 50 per cent of all pulmonary cases have laryngeal involvement. The disease is much more prevalent in men than in women, the proportion being 3 to 1, and it most commonly occurs between the ages of twenty and forty. The etiological factors are irritation of the larynx due to inhalation of smoke and dust, strain and a lowered general resistance. The three sources by which the bacilli may reach the seat of the lesion are the blood, lymph and sputum. Blood and lymph as avenues of infection give rise to deeper infiltrations in the submucosa. Infection through the sputum, when it occurs, is found most frequently in advanced cases. These lesions are more superficial. Primary tuberculosis of the larynx is a mooted question. Baldwin says there is one primary case on record. Lockard questions the existence of any primary case. Dworetzky has classified the lesions of the larynx into acute, subacute and chronic. Pathologically, the active lesions of the larynx are usually described as consisting primarily of local anemia followed by congestion. This, in turn, is followed by infiltration, and finally an ulcer occurs on the site of the original anemia. The primary anemia is rarely seen and a slight congestion is more often the initial lesion. About one-third of the early laryngeal cases show no symptoms and the diagnosis of tuberculosis depends upon the laryngoscopic examination and a familiarity with the normal larynx. The frequency of involvement of the various parts of the larynx is in most instances directly proportional to their exposure to irritation and functional activity. Care must be exercised in differentiating catarrhal laryngitis, syphilis, and malignant or benign growths. The disease is curable at any stage. Unless complicating a hopeless lung condition, the tendency of all early cases is to become clinically well. With the appearance of late symptoms and signs the outlook is grave but not hopeless. Some of these cases will make remarkable improvement. The most important thing to remember is that the condition is an evidence of a general lowered resistance. The primary focus must be sought and treated. For the laryngeal lesion the treatment is both preventive and curative. Institutional care for laryngeal patients is important because of the influence of environment and the opportunity offered for detailed supervision and control. Careful and frequent examinations of the larynx in all cases of tuberculosis are urged. When lesions are found, the cough, as far as possible, is to be suppressed and controlled and the patient impressed with the fact that he must rest physically and mentally. In the treatment of the active tuberculous lesions of the larynx, the control of the use of the voice is perhaps 75 per cent of the essential treatment. The throat may be kept clean by the use of alkaline sprays. For the relief of the cough various oils may be used in the vaporizer or intratracheal dropper, or administered by direct intratracheal injections. Sluggish lesions, especially ulcers, may be stimulated to heal by the direct application of formalin, lactic acid or argyrol. In more severe cases, pain may be relieved by insufflation of powders, such as orthoform and anasthesin. Cocaine should be reserved to the last. Surgery has a very limited but useful field. Where the lung condition is quiescent the use of the X-ray and tuberculin to stimulate healing are recommended by some. Sunlight, directly reflected upon the diseased areas by means of the Verba instrument, seems to have especially beneficial results. The general practitioner is urged to become familiar with and make frequent use of his laryngoscope.—*Laryngeal Tuberculosis; Deductions from Study of 400 cases in Stonywold and Tucson, Arizona, Sanatoriums, E. W. Hayes, Southwest. Med., August, 1921, v, 1.*

Tuberculosis of the Middle Ear.—This study includes 200 cases of purulent otitis media, all but one of which had a mastoid operation performed. Tissue removed at the time of operation was examined, and guinea pigs were inoculated with the exudate. Of the 200 cases 20 were found to be tuberculous, most commonly in children between one and ten years of age. Contagious diseases of childhood are undoubtedly of etiological importance. The presence of multiple perforations is considered to be of little diagnostic value. Observable tubercles in the drum head are rare. A feature of importance is the presence of abundant and rapidly recurring granulations in both acute and subacute tuberculous otitis. The appearance of a cold abscess in the region of the ear points to a tuberculous infection of the mastoid process. Facial paralysis is to some degree characteristic of grave cases, but in general

this sign is not common. The finding at operation of a putty-like matter, the color of which is yellowish white or grayish white, is believed to be actual proof of the presence of tuberculosis. Out of Leegaard's 25 cases, 12 began with an acute otitis, two of these with slight pain. In the tuberculous patient the wound after a mastoid operation may require six months to a year to heal. Tuberculin was used locally in 9 cases; 4 of these were cured, 3 improved, 1 doubtful and 3 unimproved. The bacteriological investigations proved all strains to be of the human type.—*Tuberculosis of the Middle Ear, F. Leegaard, Laryngoscope, June, 1921, xxxi, 374.*

Axillary Lymph Node Tuberculosis in Pulmonary Tuberculosis.—An examination of 40 cases of pulmonary tuberculosis for the presence of tubercle bacilli or anthracosis in the axillary lymph nodes revealed without question in 20 of them a connection between the diseased lung and the axillary nodes of the same side. In all the positive cases there were widespread adhesions between the pleural surfaces, while associated axillary node disease was never found in the absence of pleural adhesions; neither was it found in cases without tuberculosis in the lung. In the 20 positive cases, 15 revealed tuberculous nodules in the axillary nodes, 6 of which had also anthracosis, and 5 had anthracosis without tuberculosis. Tuberculous involvement of the mammae, external chest wall, or upper extremity was found in no case. Tattoo marks were absent in all cases. *Conclusions*: 1. Axillary node tuberculosis in the absence of external portals of entry indicates disease of the lung. 2. Isolated axillary node tuberculosis, even in the absence of clinical pulmonary findings, should suggest a latent pulmonary tuberculosis. 3. Combined carcinoma and tuberculosis of the same axillary glands are explicable on the basis of the presence of carcinoma of the mamma or upper extremity with a latent pulmonary tuberculosis.—*Tuberkulose der axillaren Lymphknoten bei Lungentuberkulose, Pickhan, Virchow's Arch. f. Path. Anat., April 9, 1921, ccxxxi, 212.*

Tuberculous Edematous Infiltration of the Lung.—Pulmonary edema in certain cases plays an important rôle in the evolution of acute bronchopneumonic tuberculosis. The edematous tuberculous infiltration has a relatively slow course, its macroscopic appearance resembles that of Roquefort cheese and its pathogenesis lies in the reactivation of a chronic tuberculosis. The clinical findings are flatness on percussion, disappearance of fremitus and egophony. Radioscopy reveals an opaque shadow. Repeated thoracenteses at different levels and on different days reveal a serous fluid on deep puncture. This fluid contains seroalbuminous droplets, pulmonary cells, pus cells and no organisms. Sputum is at first scant. Later it reveals tubercle bacilli, usually only during the last few weeks of the illness. A case is reported in detail illustrating the points stated.—*Infiltration oedémateuse tuberculeuse du poumon, G. Caussader and E. Doumer, Progr. Méd., May 21, 1921, no. 21, 225.*

Unusual Cases of Abdominal Tuberculosis.—The first case is that of a male infant of five months who had been ill for eleven days with diarrhea and vomiting. The abdomen was tender, markedly distended and showed dulness in the flanks. The pulse was rapid and feeble and the temperature 102°. Laparotomy showed free pus and intestinal contents in the peritoneal cavity, a perforation of an intestinal ulcer and a mesenteric abscess. Autopsy showed extensive tuberculous ulceration of the small intestine. One of the ulcers had perforated and the cavity of the mesenteric abscess was in relation to a ruptured tuberculous caseating lymph node. The unusual points about this case are the age of the patient and the presence of the solitary, well marked abscess originating in a tuberculous mesenteric node. The second case is that of a male of thirty-four years who gave a history of pain in the left iliac fossa for three weeks. A tender mass was felt there. On laparotomy an abscess containing foul smelling sterile pus was found, the wall of which was bounded by mesentery and bowel. From the wall a semicalcareous lymph node was removed which undoubtedly gave rise to the abscess. A few calcareous nodes were felt elsewhere in the mesentery.—*Two Unusual Cases of Abdominal Tuberculosis, E. G. Slesinger, Brit. M. J., May 14, 1921, no. 3150, 703.*

Renal Tuberculosis and Impacted Pelvic Calculus.—The differential diagnosis between renal lithiasis and renal tuberculosis, while relatively simple, in many cases may be extremely difficult or impossible without exploratory operation. Roentgenographic examination is the most valuable aid in differentiating between the two conditions. The case of a woman of thirty-seven who had had several attacks of renal colic and twice an operation for removal of kidney stones is reported. She had influenza in 1918, following which she lost considerably in weight. She complained

of pain in the right iliac fossa. A large mass was felt in the upper right quadrant. The catheter met with obstruction on the right side. A stone was seen on that side on the X-ray plate. At operation a large grayish stone was found. The kidney was markedly enlarged and contained multiple tuberculous abscesses. Probably the calculus formation preceded the tuberculous infection.—*Tuberculosis of the Kidney Complicated by Impacted Pelvic Calculus, H. A. Fowler, J. Urol., April, 1921, v, 345.*

Medical Management of Renal Tuberculosis.—*Conclusions*: 1. Let practitioners and internists take heed early of symptoms suggestive of an incipient and developing tuberculosis of the kidney. Prompt use of every available means of diagnosis should be employed, to the end that early diagnosis may be established. 2. When unilateral tuberculosis of the kidney is proved to exist, nephrectomy offers the shortest and surest road to recovery. Dallying with such cases is inexcusable. 3. There is substantial reason for believing that earlier diagnosis in this, as in pulmonary tuberculosis, and the faithful and intelligent application of proper treatment—rest, hygienic, dietetic and therapeutic measures—may enable arrest or cure of the disease. But this plan should never supplant surgical intervention when there is proved unilateral tuberculosis of the kidney or there is evidence of retrogressive changes.—*Renal Tuberculosis; its Early Recognition and Management from the Viewpoint of the Internist, F. B. Wynn, J. Indiana State M. Ass., February, 1921, xiv, 33.*

Differential Diagnosis of Renal Tuberculosis.—Tubercle bacilli in the urine from a diseased kidney mean tuberculosis on this side. Their absence does not eliminate the disease. Cystoscopy and ureteral catherization are of value in the obscure case and necessary in every case coming to surgical treatment. Not infrequently repeated examinations are necessary, and a differential diagnosis may take many weeks, occasionally many months, or may rest upon a justified surgical exploration.—*Renal Tuberculosis; Its Differential Diagnosis, H. O. Mertz, J. Indiana State M. Ass., February, 1921, xiv, 35.*

Pathology of Renal Tuberculosis.—Tuberculous infection reaches the kidney from a neighboring focus, by way of the lymphatic system, by the bloodstream, and by ascent from the bladder via the ureters. The latter is the most important avenue of infection. Out of every 5 cases of active tuberculosis 1 case on the average will have renal tuberculosis. The following types of involvement are met: (1) miliary tuberculosis, one of the manifestations of generalized tuberculosis and (2) the caseous or caseocavernous type which begins at one papilla and spreads peripherally, or an abscess breaks into the pelvis. It is progressive and in 55 per cent limited to one kidney.—*Renal Tuberculosis; Its Pathology, V. H. Moon, J. Indiana State M. Ass., February, 1921, xiv, 38.*

Roentgen Diagnosis of Renal Tuberculosis.—*Conclusions*: 1. The use of the X-ray in diagnosing renal tuberculosis is new and is not yet appreciated. 2. By the use of filters and different penetrations a series of films of different densities of the entire urinary tract should be made in all suspected cases of renal tuberculosis. 3. One out of 5 cases of renal tuberculosis will show definite roentgenographic signs. Other methods of diagnosis may have failed and the X-ray alone may diagnose it. 4. Proper illumination in the study of the films is of the utmost importance. The shadows found are caused by the deposit of calcium in the tuberculous area. They may vary from small indefinite punctate areas to the characteristic lobulated mottled shadow which is typical of a completely destroyed kidney. 5. Preparation of the patient for the examination is very important. 6. Pyeloscopic and pyelographic examinations are of value in early inflammatory infection of the kidney. 7. Cystograms of air and opaque solutions are helpful in showing bladder conditions.—*Renal Tuberculosis; Value of Roentgenographic Diagnosis, R. C. Beeler, J. Indiana State M. Ass., February, 1921, xiv, 40.*

Surgical Treatment of Renal Tuberculosis.—In unilateral renal tuberculosis early nephrectomy is indicated, and affords the only assurance of cure. When both kidneys are infected nephrectomy is contraindicated, unless one is practically destroyed and the other still has good functional capacity. Urinary symptoms usually persist after operation in proportion to their duration before the operation. Under tuberculin treatment, with proper dietetic, climatic and hygienic management, many cases will be improved, but are likely to have recurrences later. Seventy-five per cent of unilateral renal tuberculosis cases will be cured by nephrectomy.—*Renal Tuberculosis; its Surgical Treatment, A. G. Hamer, J. Indiana State M. Ass., February, 1921, xiv, 42.*

Tuberculosis of the Anterior Vaginal Wall.—Tuberculous ulceration of the vagina is rarely observed. A case is reported in which the tuberculosis seemed to be limited to the lungs, the head of the cecum and the anterior wall of the vagina. The latter was the only pelvic structure involved in the tuberculous process. There was no evidence of urogenital tuberculosis in the husband. The involvement of the vaginal wall appears to have been hematogenous in origin. It was possible to resect the ulcer with subsequent healing of the lung.—*Tuberculous Ulcer of the Vaginal Wall With Resection of Ulcer, E. K. Cullen, Surg. Gyn. & Obstet., July, 1921, xxxiii, 76.*

Tuberculous Meningitis in Adults.—Tuberculous meningitis in adults presents a very different picture from that in children. The case of a young man of seventeen is reported. He developed symptoms of fatigue, weakness, evening rise of temperature, night sweats and loss of weight, three weeks previous to his entrance to the hospital. Then came lung symptoms, a marked diarrhea and epistaxis one week prior to admission. A diagnosis of typhoid fever was made. Five days before entrance he suddenly developed paralysis of his right hand and inability to speak. This lasted only ten minutes. Physical examination on admission revealed an emaciated young man with a clear mentality, increased pulse and respiration, and fever of 38.4°C. in the morning and 39.8°C. in the evening. There were no other physical findings at that time. Four days later rigidity of the neck developed, and on the following day ptosis of the left upper lid and external strabismus of the left eye. Later there were vomiting, involuntary micturition and defecation, and rightsided hemiplegia. Death ensued in high fever on the fifteenth day from the first nervous symptoms. The principal differences between adult and infantile meningitis are (1) in the former evolution is gradual, (2) the convexity of the brain is involved, and (3) the distribution is in patches. Depending on the location of the patches there may be motor, sensory or psychic symptoms. The motor form may express itself by generalized or Jacksonian convulsions, contractures, monoplegias or hemiplegias, or involvement of the speech centre with resulting aphasia. Headache may be the only symptom and is relieved only by spinal punctures. In the psychic form, delirium, acute mania, melancholic depression or progressive dementia may be present. Comatose and apoplectic forms are also described. Spinal puncture and examination of the fluid are the most important aids. The course in the adult is even more rapid than in the child.—*La meningite tuberculeuse de l'adulte, L. Ramond, Progr. Méd., June 11, 1921, xxxvi, 280.*

Pulmonary Tuberculosis, Mycosis and Spirochetosis.—Careful bacteriological examinations would reveal many mycotic and spirochetal infections, which are now diagnosed clinically and treated as tuberculosis, especially in the Southern States. Great emphasis must be placed on this point when dealing with patients coming from the Philippine Islands. A careful examination and observation of pulmonary cases applying for treatment at the charitable institutions in Bangkok, Siam, show that 25 per cent are mycotic or spirochetal. Probably animal inoculation would give an even greater percentage. In an asylum, an examination of 100 patients with symptoms of disease of the lung showed 60 per cent as having spirochetal infection, either pure or associated with tuberculosis or moniliasis. Symptomatically these three conditions are not to be differentiated. Spirochetal and monilial infections may be acute or chronic and there may be every variation between these stages. There is no sign or symptom in pulmonary tuberculosis that may not be simulated by a spirochetal or monilial infection, even to the extreme emaciation and the not infrequent terminal hemoptysis. It has been noted that the character of the sputum in a pure spirochetal infection has a tendency to be watery or mucous, while with a mixed infection it is mucopurulent. Tuberculosis is ruled out absolutely only after animal inoculation. As regards treatment, more may be expected in cases of spirochetosis and moniliasis than in tuberculosis. Arsenic in the first and the iodides in the second condition quite often produce rapid improvement and, not infrequently, perfect cures.—*Pulmonary Tuberculosis, Pulmonary Mycosis and Pulmonary Spirochetosis, R. W. Mendelson, Mil. Surgeon, July, 1921, xlix, 81.*

Atypical Tuberculosis with Mikulicz's Syndrome.—Mikulicz, in 1888 and 1892, called attention to a syndrome of chronic, painless, symmetrical enlargement of the lachrymal and salivary glands, with freedom of the overlying skin from inflammatory reaction. Since then a large number of examples of the affection has been reported. The case here described is unusual in that it presents a typical clinical picture of Mikulicz's syndrome associated with atypical pulmonary and cutaneous lesions. The histological examination of one

of the salivary glands and of one of the subcutaneous tumors revealed undoubted miliary tubercles. A search of the literature reveals only three cases of the syndrome which are beyond question tuberculous, and only two other cases with skin manifestations, neither of which resembles this one. The patient, a white American housewife, aged twenty-nine was admitted to the medical clinic of the University of Michigan, June 16, 1920. Her past history was of no interest except for a submucous resection of the nasal septum. This operation was performed in 1913 to relieve itching of the external auditory canal. Before the middle of January, 1920, she had been entirely well. At that time there appeared on each eyelid a swelling which later developed into hard tumors. There was moderate pain during the growth of the tumors which ceased when they attained their maximum size. These were followed by other swellings and tumors in various parts of the body. In April she developed a moderate unproductive cough, accompanied by a slight afternoon fever, the temperature never rising above 99.6°. She had no night sweats, hemoptysis, hoarseness or pleurisy. She was told she had pulmonary tuberculosis, and was sent to the Michigan Tuberculosis Sanatorium. From there she was sent to the University Hospital. Examination showed a poorly nourished woman. In the outer half of each upper eyelid was an irregular, nodular tumor about the size of a large hazel nut, almost cartilaginous in hardness and not tender. There was a general symmetrical enlargement of the salivary glands. The parotids were as large as small eggs and the submaxillary and sublingual glands were as large as hickory nuts. In the lower lip, near its outer ends, were a pair of glands as large as peas, and there was another pair under the tip of the tongue. All were extremely hard, and were entirely without tenderness. Over the upper part of both lungs there were a few persistent fine râles, bronchovesicular breathing and impaired resonance. Other subcutaneous tumors, the size of peas, hard, not tender, and freely movable, were found on the arms and legs. During her stay in the hospital these increased in number, though not in size, until on July 15 it was noted that there were a dozen or more on each arm and leg. They resembled more than anything else multiple fibromata of the skin. Her temperature, pulse and respiratory rates remained normal. The enlarged glands decreased in size except the lachrymal glands which remained in the same condition up to the time of discharge, July 20. Her only treatment had been rest, a high caloric diet and, empirically, syrup of iron iodide. The clinical evidence, combined with the histological examination of the extirpated tumors, put the diagnosis of tuberculosis beyond doubt.—*Atypical Tuberculosis with Mikulicz's Syndrome: Report of a Case, with Unusual Pulmonary and Subcutaneous Lesions, P. L. Marsh, Am. J. M. Sci., May, 1921, clxi, 731.*

Lymphadenoma and Tuberculosis.—Many cases have been described in which tubercle bacilli have been found in the lesions of Hodgkin's disease. The theory is generally accepted that such tuberculosis is secondary. In the case reported no gross tuberculous lesion was found postmortem, the only macroscopic changes being those of Hodgkin's disease of abdominal type. In the affected glands and spleen tubercle bacilli were found in fairly large numbers, for the most part without other cellular reaction than one which appears to be that generally described as peculiar to Hodgkin's disease. It seems possible that in deciding against a connection between the tubercle bacillus and lymphadenoma too much emphasis has been placed on negative results of inoculation experiments. Even if it is admitted that a true lymphadenoma, not caused by the tubercle bacillus, exists, it may well be that the term at present is applied to more than one disease, perhaps including a primary tuberculosis.—*Lymphadenoma and Tuberculosis, I. Fox, Lancet, July 2, 1921, cci, 14.*

Relationship between Graves' Disease and Tuberculosis.—That there is any causal connection between exophthalmic goitre and tuberculosis is most improbable; and when we speak of a relationship between the two affections it must be understood as hypothetical rather than demonstrable. Common to both are tachycardia and fever, emaciation, diarrhea, and vasomotor disturbances, but this syndrome is not peculiar to these two affections. There is also the coincidence of a peculiar eye in each disease, which while by no menas identical has something in common—luminous, moist, etc. Steck, who writes on this subject in the *Schweizerische medizinische Wochenschrift* for June 9, 1921, li, 23, says that when a tuberculous subject has a typical exophthalmus it is of course possible that he has a hyperthyroid component. Poncet indeed pointed out that tuberculous intoxication sometimes causes enlargement of the thyroid, perhaps as a part of a defense reaction. On the other hand, histological studies of many thyroids of tuberculous subjects have failed

to show a single case of the alterations which appear in typical Graves' disease. But it has been noted that the thyroid in these cases is never normal—that it may exceptionally be tuberculous but almost invariably is sclerotic. Now, if in a defense reaction developed against tuberculosis the thyroid is disorganized, we can perhaps understand why the pictures of tuberculosis and Graves' disease may largely coincide, and why tuberculosis may be the occasion for a picture of hyperthyroidism of a special type. We say that the tuberculous toxin causes this or that symptom without much effort to explain the mechanism; but if it stimulates the thyroid function we have a ready explanation of some of the symptoms of tuberculosis—tachycardia, low blood pressure, slight fever, the tuberculous eye, and vasomotor phenomena, as the blush on the cheek, part of the tendency to perspire, etc. Such an explanation of early tuberculosis, including so called pretuberculosis, is almost too simple. If true, it would not have escaped the older clinicians. Doubtless it is not difficult to isolate a type of tuberculosis with hyperthyroidism but there is tuberculosis without this component and Graves' disease without any tuberculous factor. The author quotes authorities to prove that in a large material of typical tuberculosis, fully developed Graves' disease is as good as absent. This leaves, then, the association of the bacillary disease with mild and abortive Graves' disease or, as some term it, basedowoid, which is as far as we can go at present without something more than clinical evidence. The author has made use of a method of comparative blood testing which he describes at great length, which seems to demonstrate that the tuberculous subject's blood is quite free from certain substances found in hyperthyroid blood of any degree. The blood of any subject with Graves' disease acts as a synergist to adrenalin in producing vascular contraction, while tuberculous blood is, under all circumstances, quite free from this substance. The petty or minor basedowism of the tuberculous is therefore illusional and due to other factors. The author learned only after he had reached this conclusion that his findings and conclusions were in thorough accord with work recently published by Chvostek.—*Editorial, Med. Rec., August 27, 1921, c, 372.*

Syphilis and Tuberculosis.—The case of a colored man, forty-eight years of age, is reported from the Passavant Hospital of Pittsburgh. A few deep seated nodules on face and neck, which were continuously enlarging, were noticed a year before his entrance. Most of the lesions broke down four weeks later and formed ulcers. These as well as edema of the legs and dyspnea on exertion improved under arsphenamin treatment. The patient had an untreated chancre ten years ago. There was a family history of tuberculosis. On admittance he showed a generalized anasarca, and large undermined ulcerated areas on the lateral surface of the neck, with irregular borders, punched out uneven edges, and profuse discharge. Roentgen ray examination revealed enlarged mediastinal nodes, probably syphilitic. The Wassermann test was positive. A diagnosis of tertiary syphilis and ulcerating gummata was made. Under arsphenamin, iodide and mercury treatment, the patient improved. Three months later he developed ascites. Three litres of turbid fluid were removed. A smear showed 95 per cent of small lymphocytes, no tubercle bacilli, and even injection of the fluid into a guinea pig resulted negatively. The patient died. On autopsy tuberculosis of the peritoneum, intestines, mediastinal and mesenteric nodes, lungs, bronchi and pleura, chronic nephritis and amyloid degeneration of the kidneys, and multiple gummata of the liver and syphilitic aortitis and mitral stenosis were found. The authors believe that the iodide treatment was in part responsible for the patient's loss of resistance and development of miliary tuberculosis. This treatment had been resorted to on account of the marked kidney involvement.—*Tuberculosis and Syphilis, L. Hollander and F. C. Narr, Arch. Dermatol. & Syphilol., August, 1921, iv, 153.*

Influenza and Tuberculosis.—At the Trudeau Sanatorium, a study was made in February, 1919, of the effect of influenza upon tuberculosis. This study included patients in the Sanatorium suffering from influenza and also the discharged cases whose annual reports had been received prior to June 1, 1920. The frequency of tuberculosis following upon an attack of influenza and the reactivation of old pulmonary tuberculosis after influenza was also computed in all cases entering the Sanatorium during the active phase of the epidemic between October, 1918, and December, 1919. In February, 1919, 16 cases of influenza occurred at the Sanatorium. Four of the victims were patients and 12 were nurses, of whom 8 were tuberculous. In no case of their tuberculous patients or nurses was a definite aggravation of their disease found. Of 251 patients in the Sanatorium whose history was carefully gone over for the probable onset of their tuberculosis it was found that 17 had symp-

toms of tuberculosis antedating their attack of influenza and that 35 had symptoms after the attack. Of the 17 mentioned, pulmonary tuberculosis was proved to have existed before influenza in 14 of the cases, and of the 35 mentioned it was proved after influenza in 26 cases. Reports were received from 2524 discharged patients out of a total of 3055 supposed to be living. Of these, 354 had an attack of supposed influenza and 2160 did not have the disease during the epidemic. Of the former 77 relapsed and of the latter 262 relapsed with their tuberculosis, showing that those having influenza were more subject to relapses of their tuberculosis. Thirty of the 354 cases who had influenza died during the year and 67 of the 2160 who did not have influenza died during the year. It was also found that, as the number of years after discharge increased, the percentage incidence of influenza diminished. Slight rises, followed by a gradual fall, occurred approximately every ten years.—*Influenza and Tuberculosis, F. H. Heise, Thirty-Sixth Annual Medical Report of the Trudeau Sanatorium, 1920, 11.*

Tuberculosis and Arteriosclerosis.—A study of 3578 macroscopic sections at the Pathological Institute at Barmbeck, after excluding all unsatisfactory protocols and all artery changes occasioned by lues, revealed an increased preponderance of fatty deposits (plaques) in tuberculosis over the other cases, with the tendency toward a later and slower development of arteriosclerotic changes; the grade of sclerosis also developing at a later age period. The total male material examined was obtained from 1884 and female from 1502 cases without lues or tuberculosis, and 786 males and 416 females with tuberculosis. Arteriosclerosis was found to arise later in women than in men, and equal grade of involvement was attained only after more advanced years. Fatty plaques had an earlier incidence in women that in men, and were more common among cases of tuberculosis than in the other cases. In spite of the increased incidence of fatty plaques in tuberculosis, definite arteriosclerosis during middle and advanced age was not so common compared with the remaining material. In old age, however, like conditions were found. It is concluded that infectious or toxic agents are causing the fatty plaques and functional disturbances of senile arteriosclerosis.—*Beiträge zur Atherosklerosefrage mit besonderer Berücksichtigung der Beziehungen zwischen Tuberkulose und Atherosklerose, H. Cramer, Virchow's Arch. f. pathol. Anat., March 14, 1921, ccxxx, 46.*

Tuberculous Infection and Delayed Healing.—Two cases are reported with small tuberculous lesions of the eye, which were favorably influenced by treatment with old tuberculin. In the first case operation had been performed for trauma of the eye. Healing was delayed until the ulcers were discovered and treatment given. The second case was one of cyclitis caused by the presence of the lens acting as a foreign body. The lens was removed, but healing did not take place until treatment was instituted.—*Tubercular Infection as a Cause of Delayed Healing in Operations on the Eye, E. B. Miller, Am. J. Ophthal., July, 1921, iv, 516.*

Treatment of Tuberculosis.—The attention of physicians and of the public is called to the ever increasing spread of pharmaceutical and medical quackery in the treatment of tuberculosis. Large numbers of tuberculous individuals are attracted through skilful and unscrupulous advertising to patronize commercialized institutions. The danger of these places is apparent; the patient loses precious time, so that an incipient lesion, still amenable to proper treatment, gradually becomes incurable. The tuberculous patient is drained of his savings, which he would have been able to devote to securing for himself an effective course of treatment in a sanatorium or at a health resort. Also, the isolation of the patient, so necessary to avoid a spread of the infection, is delayed. Many conscientious persons through weakness, courtesy or error of judgment lend themselves to the diffusion of dangerous or unreliable methods. In the hospitals, universities and laboratories, a large number of men are engaged in serious, disinterested research on the value of various drugs, chemical and biological products, sera and vaccines, for the purpose of discovering a cure for tuberculosis. Physicians are urged, while waging a ruthless war on quacks, to be on guard against premature enthusiasm over new remedies. The quest for a specific treatment of tuberculosis is legitimate, but before making any remedy known to the public, before placing it on the market as a new and effective agent, it should be submitted to the most critical examination, in order to afford the necessary guarantee of its value. The remedy should be used in a large number of cases, for a considerable period of time, in order to avoid fallacious coincidences. It should produce, if not constant, at least frequent good results. The efficacy of a method of treating tuberculosis can be gauged only from the progressive and permanent disappearance of

the cardinal and objective symptoms of the disease. The patient, who enters any institution for the treatment of tuberculosis, should do so in the hope and belief that he will leave it freed from all signs of active tuberculosis and be no longer a focus of infection. Even in severe cases of tuberculosis cures are achieved much more frequently than the laity believes. The first duty of the physician is to establish the existence of every incipient case by an early diagnosis. It should become a reflex action for the physician to insist upon a sputum examination whenever he is confronted by a patient with a cough. The public must be acquainted with the simple means which are in reach of even the most ignorant to establish for themselves the early diagnosis of this disease. Too much emphasis can not be given to the necessity of placing the public, as well as physicians, on their guard against the prevalent opinion that because a certain remedy is good for one case of pulmonary tuberculosis it must be good for all. This assumption of the existence of a specific cure is bound to prove dangerous, indeed fatal. To treat a tuberculous patient effectively, it is imperative to treat him individually, according to the method most suited to his particular case. It may safely be asserted that once this adaptation of the special remedy to the particular case is fully appreciated by physicians engaged in combating tuberculosis, the treatment of individuals, and consequently of the disease in general, will be productive of excellent results, and will no longer be a vain display, calculated solely to allay the patient's fears.—*The Treatment of Tuberculosis, R. Burnand, Internat. J. Publ. Health, July-August, 1921, ii, 375.*

Institutional Treatment in Surgical Tuberculosis.—This article is a report on the results obtained at the Manchester Residential Schools for Crippled Children over the period of 1905 to 1918. The children admitted must be between the ages of five and sixteen. This may have the result that a number of early cases are missed; as the institution is primarily a school, the type of cases admitted is limited to early noncomplicated cases which have not suffered materially in health. The treatment of the cases has been on conservative lines, with careful and exact fixation. Abscesses are treated by aspiration and very little open operative work is done. Investigation of the after-history of 159 cases, discharged not less than three years ago, showed that of the cases of tuberculous disease of the spine, 34 are alive and well, 10 are alive but with disease still present, and 26 have died. Of the hip cases, 38 are alive and well, 5 alive with the disease still present and 9 have died. Of patients with knee involvement, 28 are alive and well, 1 alive with the disease still present and 2 have died. Six cases with tuberculous disease of the foot are all alive and well. Of the 35 cases who died, 29 showed evidence of abscess formation on admission to the schools. The author believes that the average time needed for the treatment of these cases is longer than has been generally supposed. In his own cases the average duration of in-patient treatment of cases of surgical tuberculosis of the spine and lower extremity is three years and two months.—*Results of Institutional Treatment in Surgical Tuberculosis, E. D. Telford, Brit. M. J., July 2, 1921, no. 3157, p. 8.*

Trudeau Sanatorium Report for 1920.—The number of applicants at the Sanatorium was 459, of whom 355 were admitted. Of the latter, 255 were discharged being classified as follows: In 33, or 12.9 per cent, the disease was apparently arrested; in 108, or 42.4 per cent, the disease remained quiescent; 33, or 12.9 per cent, were improved; 46, or 18.05 per cent, were not improved; in 7, or 2.75 per cent, the diagnosis was doubtful, tuberculosis being suspected; 26, or 10.2 per cent, were found to be nontuberculous; 2, or 0.8 per cent, died. Suspects and the nontuberculous usually remained for a period of less than three months. In addition to the above list, there were treated 50 ex-patients and part time employees, of whom 18 are now at the sanatorium, making the total number of those treated 305. The average term of residence (of those who remained over three months) was five months and eighteen days, ten days longer than in the previous year. One hundred and sixty-one patients gained weight, averaging 11 pounds. Forty-five lost weight, averaging 6 pounds. Forty-six patients had served in the army or navy during the late war, most of whom are being maintained by the Government. In the X-ray department more than 10,000 examinations were made and much valuable research work accomplished. A special study of the early diagnosis of intestinal tuberculosis was made, the result of which is an important aid to the patients at a time when successful treatment can be given. Eighty-one patients have been employed in some capacity during the year, and earned wages approximating $16,500. One hundred and forty-six patients, 19 nurses and 31 ex-patients and others, had instruction in arts and crafts this year. The daily attendance has been 20, a larger average

than any previous year. The total time they were occupied was nearly 6,000 hours, and that recorded for the patients 4,939. The working time is prescribed by the physicians. Rattan reed work, jewelry and metal crafts, picture framing and photography were the chief occupations. A few of the ex-service patients attended the Federal Vocational School in Saranac Lake. As a consequence of higher prices, the approximate cost per capita per week was $17.45, or $1.00 more than in 1919. The year 1920 will be remembered for the extravagantly high prices of food, as of all commodities.—*Thirty-Sixth Annual Report of the Trudeau Sanatorium, 1920.*

Rhode Island State Sanatorium Report.—During the year 1920, 497 patients were admitted to the sanatorium and 510 discharged, the whole number of treated patients being 754. Nearly all of the children used the Clear River swimming pool almost daily from May to October with undoubted benefit, local and constitutional. Between April and December, the children received heliotherapy during the daytime by wearing abbreviated trunks so as to expose most of the body. In the restricted sunshine of the winter months, this treatment was intensified in some of the extrapulmonary cases by the use of sun lenses as developed at Porsmeur, France. Thirty-seven cases, having discharging sinuses and tuberculous bones and joints, were treated by violet rays from the mercury quartz lamp. Of 7 cases in which the enlarged lymph nodes disappeared or the sinuses closed, the average duration of treatment was 118 days. Artificial pneumothorax was given to a few selected cases with limited lesion but showing a progressive tendency. Tuberculin was used only in afebrile cases with extrapulmonary lesions. The sanatorium records from 1909 to 1917, inclusive, show that of 121 widowed patients under seventy years of age, 44, or 36 per cent, had been widowed by tuberculosis. This percentage is about three times as great as in the general community. In the fall of 1918, 40 per cent of the adult ambulant patients had influenza. Of 789 tuberculous individuals admitted during 1919 and 1920, in which a full history was obtained, 317, or 40 per cent, claimed to have had influenza since August, 1918, and as 80 per cent of these attacks were dated between September, 1918, and April, 1919, most of them were probably true influenza. Fifteen per cent of the patients admitted during the past two years date the clinical onset of their tuberculosis from an influenzal attack. In only 8 per cent of the patients and employees of the Sanatorium, whose tuberculous disease was quiescent or better, was there a relapse of tuberculosis activity after influenza. The number of applicants for admission in the year following the epidemic was not increased. A sanatorium problem resulting from the influenza epidemic which will persist a long time is the number of cases of chronic bronchitis, bronchiectasis, unresolved pneumonia, and abscess of the lung, heretofore rare but now comparatively frequent, which come to the sanatorium and the diagnosis of which requires careful study. Of the 479 patients admitted during the past year, 379 were on the free list and many patients were transferred to the free list after admission, so that of the 87,351 days' treatment, 74,049, or 84 per cent, have been made free. The weekly per capita cost of Sanatorium treatment for 1920 was $16.99, which was an increase of more than 23 per cent over that of the previous year. This great inflation of prices in 1920 was unexpected and resulted in a deficit of $14,637.13. During the past year 25 ex-service men were cared for. A special sale of patients' handicraft articles netted over $400. The equipment for light therapy has been increased by the purchase of a mercury quartz lamp and by the donation of two sun lenses. The sanatorium should be safeguarded by chlorination of the water supply from Wallum Lake.—*Sixteenth Annual Report of the Rhode Island State Sanatorium at Wallum Lake, 1920.*

Vaccination Against Tuberculosis.—Tuberculous infections can be prevented only by vaccination. Biological tests are necessary in the truly early stage of tuberculosis, to establish a positive diagnosis of the presence of tubercle in the organism. In an analysis of reactions of 1,315 indivduals, no reaction of any kind was noted in 25, or 1.7 per cent; local reactions occurred in only 366, or 28.3 per cent; and general febrile, or focal reactions, were observed in 924, or 70 per cent. Therefore no infection had occurred in 1.7 per cent, there were no tuberculous lesions accessible to the circulation in 28.3 per cent, and 70 per cent were actually tuberculous and liable to further progressive disease. Including previously vaccinated cases with the above, and adding vaccinations made since, 3000 children have been vaccinated since 1903. Apart from the biological tests of the blood and the general and local improvement which followed promptly, not a single case is known to the authors in which the tuberculosis recurred or became active. The time, however, intervening since their

vaccination is entirely too short to form final conclusions. Unless vaccination is resorted to in the first years of life, the infection as a rule is already accomplished. Children in a tuberculous environment should be vaccinated immediately or soon after birth. There should really be no selection of cases. Every child should be vaccinated, although the administration of the vaccine should be deferred in instances where other diseases are present, especially where the symptoms thereof would interfere with the observations of reactions, as, for instance, fever or acute catarrhal affections of the air passages. There is no reason for delay. The earlier the child is vaccinated, the better is the prospect that no infection with tubercle bacilli has occurred. The authors are frequently asked in what respect their vaccine differs from the various tuberculins and from the tubercle bacillus emulsions in the market. They answer that it contains only the albumoses, albumins, nucleoalbumins, fatty substances, and lipoids of tubercle bacilli in proper proportion, obtained without subjecting them to physical or chemical injury, and represents all organic body substances of the tubercle bacillus in solution. Tuberculins as first made by Koch, and thereafter by others, are derived from the liquid media upon which tubercle bacilli have been grown and have thereafter been filtered out; they contain little or no bacterial body substance. Emulsions simply represent the tubercle bacilli after having been separated by shaking or grinding of the bacilliary mass, the emulsion being sterilized by heat. The authors' studies show that in 28.3 per cent of their cases infection was overcome, or the lesions had become obsolete. This proves that tuberculous lesions still accessible to the circulation can be made to disappear by the use of specific vaccines. The rapidity and the uniformity of the results of vaccination depend upon the time elapsed from the inception of the infection, the extent which the lesions have reached, and the degenerative alterations present.—*Vaccination Against Tuberculosis, K. von Ruck and R. E. Flack, Med. Rec., June 18, 1921, xcix, 1048.*

Treatment of Tuberculous Adenitis.—Tuberculous lymph nodes may be simply hypertrophic or in addition there may be sclerosis or caseation. The nodes may be hard to palpation and yet have begun to caseate in the centre. The medical and hygienic treatment consists of substantial food and fresh air and a sojourn at the seaside, if possible. The latter must be sufficiently long, as otherwise recurrences are likely to occur. Codliver oil and Fowler's solution are also important aids to local treatment. The latter may be physical or surgical. The physical agents are radiotherapy, which is especially favorable in the simple hypertrophic form and heliotherapy which gives excellent results in fistulous forms with secondary infection. In the nonsuppurating forms, interstitial injections of ether and iodoform, glycerin and iodoform, or iodoform and creosote may be given, with the object of producing sclerosis. When it is desired to obtain softening and suppuration, camphorated thymol is of use. After this result is obtained, the treatment, as in all suppurating forms, is aspiration, care being taken to aspirate at a point in the periphery of the abscess and parallel to its wall. This may be followed by the injection of 10 per cent iodoform in ether. Extirpation is sometimes indicated in adherent and fistulous processes which have resisted all other treatment.—*Traitement des adénites tuberculeuses, A. Broca, Progr. Méd., May 21, 1921, no. 21, 227.*

Treatment of Tuberculous Adenitis by Roentgen Rays and Radium.—In the treatment of tuberculous adenitis better results are obtained from the use of radium and the roentgen rays than by any other method. Radiotherapy alone will cure over 90 per cent of the cases. At present, surgeons of experience are not operating primarily for tuberculous adenitis. If they operate it is only to remove fibrous nodes after the tuberculous foci have been destroyed by roentgen rays or radium. These hard, fibrous nodules seldom ever contain tuberculous foci, but it may be advisable to remove them as one would a foreign body, through a small incision. Experience has proved that tuberculous adenitis is not primarily a surgical disease. Many laryngologists will not remove diseased tonsils if the cervical nodes are enlarged until the nodes have been given a thorough course of treatment, either by roentgen rays or radium. Radiation of the enlarged cervical nodes is important before removing the tonsils of children under fifteen years of age, and particularly so if under the age of five or six, as the lymphatic vessels are wide open, and in the removal of the tonsils before radiation there is danger of producing a general infection if tuberculosis is present. In the treatment of tuberculous adenitis the most important thing to be remembered is that it is a local manifestation of a constitutional disease. Prophylactic treatment should be given more attention, and an effort should always be made to find the

channels of infection. The importance of removing unhealthy tonsils, bad teeth, etc., should not be overlooked. Since the disease can be removed successfully by roentgen rays or radium, complete extirpation of the tuberculous nodes should never be performed until the disease is well localized. When the old methods of treatment are employed a certain percentage of the patients acquire pulmonary tuberculosis. This possibility never occurs when radiation is given before any lung involvement takes place. For this reason, medical treatment should not be persisted in too long without radiotherapy. Large nodes due to an inflammatory process are frequently secondary to a septic condition elsewhere and a search should be made for the primary lesion. When this is found and treated, if the nodes remain large, and particularly if they show a tendency to suppurate, radiotherapy should be employed at once. Suppuration can nearly always be avoided when this treatment is given properly and promptly. Constitutional infection is not uncommon when tuberculous nodes are neglected. As long as the nodes do not suppurate they are usually checking the tubercle bacilli but they are undergoing pathological changes. Untreated tuberculosis of the nodes is often followed by tuberculosis of the bones and joints, and finally there is an extension into the lungs. In the treatment of tuberculous adenitis in the future, when a more systematic raying is employed and when the cases are referred earlier, this method of treatment will be universally accepted.—*The Treatment of Tuberculous Adenitis by Roentgen Rays and Radium, R. H. Boggs, Am. J. M. Sci., July, 1921, clxii, 90.*

Severing Adhesions Impeding Therapeutic Pneumothorax.—Jacobaeus describes his experience with cauterization of bands and other adhesions in 40 cases of pulmonary tuberculosis in which artificial pneumothorax was indicated. There was never any serious hemorrhage in any instance from the cauterization, and only once loss of 100 or 200 cc. of blood. Pleural exudation followed, however, in 50 per cent. The exudate was absorbed in a week or two in most of the cases, but in 8 per cent it progressed to a serious tuberculous empyema which proved fatal in three of the cases. In 75 per cent of the total 40 cases the desired result was attained by breaking up the adhesions with the actual cautery, thus enabling effectual compression of the lung by the pneumothorax, which otherwise would have been impossible. A number of instructive roentgenograms are reproduced. Jacobaeus first proclaimed the feasibility and the advantages of the procedure in 1913, and now, besides his own forty cases, Holmboe, Skärgard, Saugman and others have applied this method with gratifying results. The thoracoscope is introduced through a cannula, and an outline sketch of the bands seen is drawn to serve as a map. With this as a guide, the actual cautery is introduced through the cannula and the adhesions severed.—*The Cauterization of Adhesions in Pneumothorax Treatment of Tuberculosis, H. C. Jacobaeus, Acta Chirurg. Scandin., March 7, 1921, liii, 293.*

Artificial Pneumothorax.—Pneumothorax treatment is indicated every time that life is threatened by the extension of the local lesion, according to Forlanini. The condition of the other lung must be investigated by the X-ray. Care is recommended in diagnosing disease in the better lung from sounds which are merely conducted. Sharp consonating crepitations are nearly always audible on the opposite side near the spine and about the axilla, though they may be less plainly heard in some cases in the area between these points. Often a pneumothorax will unexpectedly remove signs in the functionating lung. It is not wise to let refills run above 700 or 800 cc. and in most cases 500 cc. or even less is a preferable amount. The interval depends on the quantity and on the rate of absorption. A long interval may allow of expansion and attachment of an imperfectly collapsed lung. Mediastinal overdisplacement may be difficult to discover without X-ray examination. The symptoms may be vague and the position of the heart may not appear to be unduly altered. Increase of pressure because of the onset of pleurisy is not a rational procedure. Surgical treatment of adhesions and extrapleural thoracoplasty are difficult but attended with success in skilful hands.—*Artificial Pneumothorax, C. Riviere, Brit. M. J. June 4, 1921, no. 3153, 810.*

Artificial Pneumothorax in Treatment of Hemoptysis.—In 10 of the 11 cases the hemoptysis was merely an additional indication for the collapse therapy of the unilateral destructive tuberculous process. The tendency to hemorrhage from the lungs was arrested at once, and it never returned in the 6 cases of complete pneumothorax. In the others, further measures to compress the lung were required later. In an eleventh case it proved impossible to induce the pneumothorax, and death ensued from pneumonia. Necropsy revealed that the bleeding had been from the supposedly

sound lung, although nothing had suggested this during life; not even roentgenoscopy. No roentgenogram had been made.—*Haemoptyser behandlede med Pneumothorax Artificialis, J. Begtrup-Hansen, Ugesk. f. Laeger, March 31, 1921, lxxxiii, 457.*

Nonoperative Treatment of Surgical Tuberculosis.—Surgery still plays a part in the treatment of bone, joint and lymph node tubercle, though in cases of active disease it is continually diminishing. Conservative treatment is defined as the adoption of all measures which tend to improve the patient's general health, increase his powers of resistance, and preserve or restore the part or parts attacked, while radical treatment aims at the cure of the disease by the removal of the local lesion. Conservative treatment also includes the education, instruction, manual training and amusement of the children, and the prevention of tuberculosis in those exposed to the disease. Concerning local treatment the rule is stated that tuberculous abscesses, secondary to disease of the spine, hip or any of the larger bones or joints, should never be opened. They should be aspirated as soon as possible after their formation. Important adjuvant methods are heliotherapy, balneotherapy, chemotheraphy, vaccine and X-ray treatment. Attention to teeth, skin, throat, nose, ears, and eyes must not be neglected. A department for the after-care of these patients is of the greatest importance. Tables and illustrations representing the good results obtained at the Lord Mayor Treloar Crippled Hospital at Alton, England, are included in this report.—*The Nonoperative Treatment of Surgical Tuberculosis, H. Gauvain, Lancet, May 21, 1921, cc, 1065.*

Chaulmoogra Oil in Leprosy and Tuberculosis.—A recent experimental investigation has been made with derivatives of chaulmoogra oil, especially sodium morrhuate, sodium gynocardate and hydnocarpic acid, which had proved effective in the treatment of leprosy, in animals infected with tuberculosis. In the acute general tuberculosis produced in very susceptible animals, the results were entirely negative, except for an early febrile reaction followed by a fall of temperature, in 2 goats which eventually succumbed to the infection at about the same time as a control animal. It is pointed out that these animal infections are equivalent to acute general tuberculosis in man, so that the failure in such cases does not prove the drugs to be useless in the more chronic forms of tuberculosis, which form the great majority of human cases. Rogers concludes that these drugs are worthy of further trial in the more chronic forms of the disease, and especially in lupus and surgical tuberculosis, where any changes will be visible and easily observed.—*Chaulmoogra Oil in Leprosy and Tuberculosis, L. Rogers, Lancet, June 4, 1921, cc, 1178.*

No Compromise with Bovine Tuberculosis.—Reports state that tuberculosis is prevalent in from 40 to 80 per cent of all livestock in Germany and other foreign countries. In certain thickly populated cattle districts of America, bovine tuberculosis exists in from 25 to 30 per cent. In view of these figures it is difficult to understand articles appearing, not infrequently, in various veterinary publications, farm journals, and livestock papers criticizing the work being done by associations to establish methods and rules for tuberculosis free accredited herds. The chief objection voiced by these writers seems to be based on what they consider the indiscriminate slaughter of reacting cattle. In 1917, an organization for coöperative tuberculosis eradication was effected in the United States between the Bureau of Animal Industry, the livestock sanitary officials of the various States and the livestock owners. The policy of this campaign is that an animal which has once been classed as tuberculous is and should remain definitely marked as a potential danger to healthy cattle with which it might come in contact. The records of the Bureau show that from April, 1920, to the end of March, 1921, approximately 92 per cent of the reactors slaughtered were found to be diseased. Many additional cases were disclosed by laboratory examination of suspected lymph nodes and by animal inoculation. Reports for the last few months indicate that an average of over 125,000 head are being subjected to tests monthly. This alone would prove the satisfaction with which the work has been received by the most interested parties, namely, the livestock owners themselves. Other criticisms are (1) abattoir statistics on the slaughter of calves indicate that calves under six months of age are less susceptible to infection than adult cattle, and (2) one exposure to infection is possibly not a serious matter. Since the intracutaneous method of testing has become generally used, it has been proved that in areas in which a considerable amount of infection has been found a large percentage of calves originating in such herds will react either as calves or at a later date. The thought that one exposure to infection of tuberculosis is to be lightly regarded is

pernicious. Any measures which give the benefit of the doubt to tuberculous animals redound only to the discredit of the profession. Fully 90 per cent of livestock owners who had the opportunity of holding valuable cattle in quarantine for breeding purposes, have refused such offers. In handling such an insidious disease as tuberculosis, the idea of holding infected cattle is repellent to livestock owners.—*No Compromise with Bovine Tuberculosis, L. B. Ernest, J. Am. Vet. M. Ass., August, 1921, lix, 603.*

Accredited Herd Plan and the Practitioner.—An accredited herd is one in which no animal affected with tuberculosis has been found by physical examination upon two annual or three semiannual tuberculin tests, applied by a veterinary inspector of the United States Bureau of Animal Industry, or a regularly employed veterinary inspector of the State. The detection of tuberculosis depends almost entirely upon the use of tuberculin tests. The initial testing in accredited herd work may be performed by the subcutaneous or intracutaneous method. The ophthalmic method may be used only in combination with the subcutaneous or intracutaneous test. The subcutaneous, until recently, has been the only officially recognized and generally used tuberculin test. The ophthalmic method now ranks very high. The Bureau of Animal Industry for some months past has supplied inspectors with tuberculin discs for conjunctival use. Each disc contains 0.1 gm. O. T. Only one eye is treated, the other eye being observed as a control. The first tablet is used as a sensitizing agent, and the second is referred to as the diagnostic tablet. Occasionally, in the case of an uncertain reaction, a third tablet should be applied about four or five hours following the second disc. The best results are obtained when the tablet is inserted well up under the upper eyelid, where it lies contiguous to the secreting structures, the lids being held in apposition until the tablet has dissolved, which will be about thirty or forty seconds. There seems to have been no official code adopted for the reporting of ophthalmic reactions. The author suggests the folowing: x = the amount of mucopurulent exudation; l = lacrimation; h = hyperemia; sx = slight exudation (2 to 4 minims); mx = marked exudation (5 to 10 minims); ex = extensive exudation (more than 10 minims). All animals exhibiting less than sx would be classed as suspicious, and those presenting sx or more would be classed as reactors. The control eye should remain normal. If after insertion of the diagnostic tablet observations have been made every two hours until the twelfth or fifteenth and no reaction is evident, the animal may be classed as apparently free from tuberculosis. The Bureau supplies an especially prepared intracutaneous tuberculin, containing 50 per cent of concentrated O. T. From 0.1 to 0.2 cc. of this tuberculin is injected by means of 2 cc. syringe with a curved or straight 24 gauge needle, or a Schimmel dental needle may be used. The site of injection is in either of the subcaudal folds or in the immediate vicinity, where the skin is soft and pliable. The veterinarian must realize the importance of feeling the condition of the subcaudal folds at the time of injection. If he knows the normal feeling he will recognize the abnormal feeling. This is an essential point in the determination of a reactor. If any abnormality of the skin under the tail is observed, the character of the condition is to be noted, with the identity of the animal. Then when a reaction appears, the animal must be eliminated from the herd. Instructions have been or soon will be issued by the Bureau of Animal Industry with reference to the examination for recognition by the State and Federal authorities as qualified veterinarians for the tuberculin testing of accredited herds, and the places at which it will be held. The State and Bureau solicit the interest and hearty coöperation of every qualified veterinarian.—*The Accredited Herd Plan, the Tuberculin Tests, and Their Relation to the Practitioner, W. C. Dendinger, J. Am. Vet. M. Ass., August, 1921, lix, 615.*

Bovine and Human Tuberculosis.—In the crusade which is now being waged against tuberculosis the veterinarian must be vigilant and do his part in insisting upon elimination from dairy herds of all tuberculin reacting animals. Unfortunately, the owner of the reacting animal often takes a purely economic view of the matter. This attitude, backed by the apathy of the milk consuming public, serves to handicap materially the work along these lines. Cows reacting to the unofficial test though in a good physical condition are not infrequently left in the milking herd or, if eliminated, take their place in the herd of a neighbor, or in the herd of a distant State whose borders they cross in spite of laws to the contrary. Their presence there then establishes new foci of tuberculosis from which the disease may be spread far and near. According to figures compiled by Park, of the New York City Board of Health, the frequency of bovine tuberculosis in man

as collected by various investigators is as follows: In adults, 955 cases have been examined of which 940 showed human infection and 15 bovine infection. In children from five to sixteen years of age, out of 177 cases investigated, 131 were human and 46 bovine infections. Among children under five years of age there were 368 cases, of which 292 were found infected with the human and 76 with the bovine type. Park also cites 9 cases under six years of age, who were fed exclusively on cow's milk at the Foundlings' Hospital. Five of these children died of bovine and 4 of human infection. At the Babies' Hospital where the infants are nursed or fed on prescription milk, out of 63 children dying of tuberculosis, 59 proved to be human and 4 bovine infections. In England, 23 to 25 per cent of the fatal cases of tuberculosis in children are due to bovine infections. Stiles, of Edinburgh, reports on 72 cases of tuberculous cervical lymph nodes operated on at the Children's Hospital, in which the disease was due to the bovine bacillus in 65 cases and in only 7 to the human. It must be understood that the cow with a tuberculous udder is not the only source of danger. The cow with an open tuberculous lesion which is eliminating the bacilli with the expired air in the acts of bellowing and coughing, or with the feces, the urine or vaginal discharges, contaminates herself, the neighboring animals, and her stable. From these sources the bacilli may get into the milk at the time of milking or subsequently. It must be remembered also that it is not only the visibly affected cow that may eliminate tubercle bacilli in her milk and that this elimination may not be constant. A bacteriological examination of the milk of a reacting cow, if negative, is not conclusive evidence that the milk of the animal is harmless so far as tuberculosis is concerned. In Georgia, dairy herds are free from tuberculosis, due to the fact that they are more or less isolated and comparatively few in number; also there is little interstate traffic of dairy animals. That such an ideal condition shall continue, the veterinarians of the State must be ever on guard against the introduction of this devastating disease.—*The Relation of Bovine to Human Tuberculosis and the Status of the Veterinarian in the Fight to Control This Disease, A. G. G. Richardson, J. Am. Vet. M. Ass., August, 1921, lix, 609.*

Skin Tuberculosis in Cattle.—This disease in cattle, when due to the bovine bacillus, appears for the most part in the verrucous form. The lesions are circumscribed, and in close proximity to the skin. Unless a careful search is made they may be overlooked. They have a tendency to locate in distal parts, particularly in the extremities where the circulation is limited. They are more prevalent below the knee or hock, although they may be scattered over the body along the course of the lymph nodes. Generally they are calcareous or caseocalcareous, slightly hardened and irregular in outline, and vary in size from a small pea to a walnut. Occasionally they are hard or horny and may be covered with a crust. The overlying skin is frequently thickened. In color the lesions are grayish yellow or light pale yellow. An unhealed lesion may be present, but ordinarily the skin presents no unhealed surfaces, especially if the disease has been present for any length of time. As tuberculosis cutis is practically a painless affection, any history is usually lacking, but the disease is much more prevalent than is generally supposed. Healthy cattle, quartered in yards with cattle affected with visceral lesions, become inoculated through lying on the excreta of the infected animals. This is particularly true in the West where the cattle occupy a common feed yard with other livestock, and manure is removed at uncertain intervals. Examination of cattle for tuberculous skin lesions could be made advantageously whenever tuberculosis is indicated or suspected as a result of the tuberculin test. Careful palpation of the skin, especially in the region of the extremities, should be made and any suspected thickness or other abnormalities noted. If this record accompanied the animal when submitted for slaughter, it would aid the postmortem examination. The latter should include a careful palpation of the skin of the extremities. It is an easy matter for a small tuberculosis lesion, the size of a millet seed or pea, to be removed or destroyed during the rapid method of removing the hide so often practiced in establishments having a large volume of slaughtering operations. For this reason the removal of the feet should be permitted only under the direct supervision of the attending veterinarian.—*Tuberculosis Cutis, W. D. Wright, J. Am. Vet., M. Ass., August, 1921, lix, 598.*